



RESEARCH ARTICLE

EVALUATION OF KNOWLEDGE, ATTITUDE, SELF-REPORTED PRACTICES AND PRESCRIPTION PATTERN OF INTERDENTAL AIDS OF DENTAL STUDENTS

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ABSTRACT

Effective oral hygiene is a crucial factor in maintaining good oral health, & thus, overall health. The regular & effective removal of dental plaque is important to prevent common oral diseases like gingivitis & periodontitis effected by use of interdental aids in addition to toothbrush. Dentists play a major role in creating awareness about the importance of interdental aids & motivating patients to use them. This study aimed to evaluate the knowledge, attitude, self-reported practice & prescription pattern of interdental aids by dental students of Sinhgad Dental College and Hospital, Pune. Data was collected using a 22-item questionnaire from 200 dental students (undergraduate and post-graduate). Mean knowledge score was determined to be 2.27 out of 5. 100% correct responses were given by only 1% participants. 87% agreed that the routine use of dental floss is necessary for maintaining periodontal health. 74% reported that dental flossing is technique sensitive & time consuming. 19.5% respondents use other interdental aids like interdental brushes (11.5%) or toothpick (7%) occasionally. 81.5% participants reported that they prescribe interdental aids to their patients. 75% demonstrate the correct technique of using interdental aids. The overall knowledge was found to be below average & a greater emphasis is needed to improve it. A good knowledge base, attitude can positively influence good oral hygiene practices among themselves and the general population. Dentists should practice recommended oral self-care and act as role models.

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INTRODUCTION

Periodontal disease is a pathological condition affecting the supporting structures of the teeth, and is a common oral ailment seen in dental hygiene practice. If left untreated, periodontal disease may eventually lead to tooth loss. Dental plaque is one of the major causes of gingival and periodontal disease. Studies have shown that oral prophylaxis reduces gingival and periodontal inflammation and renders the environment significantly less pathogenic; however, the environment gradually shifts back to a pathogenic supportive environment over three months. Daily oral self-care to control the supra-gingival plaque may assist in slowing or reducing the shift to a pathogenic environment. Toothbrushes are unable to penetrate intact interdental areas, necessitating the use of interdental aids (Darshana Bennadi, 2013) In a study (Kiger, 1991) conducted by Kiger RD *et al*, mean GI scores were less for subjects using toothbrush and floss and even lesser for those using toothbrush and interdental brush.

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Since periodontal disease is among the major public health issues in India, there is an immediate need to identify preventive strategies to reduce the burden of the disease (Charu Madan, 2014). According to World Health Organization (WHO), definition of Health, resources around the world have been trying to raise the critical consciousness of people to affect a change from the existing disease-centric, pain relieving notion of healthcare to promote a health centric and well-being concept. Central to these attempts has been the idea of health promotion through education, instructions and motivation (Darshana Bennadi, 2013). Self-care in health, as per WHO, refers to the activities individuals, families and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health. These activities are derived from knowledge and skills from the pool of both professional and lay experience. They are undertaken by lay people on their own behalf, either separately or in participative collaboration with professionals" (Darshana Bennadi, 2013). According to a study (Charu Madan, 2014), conducted in 2014, there was lack of adequate knowledge regarding dental floss among dentists in India. 78% of the dentists responded that the routine use of dental floss was necessary for good periodontal health. 15.3% of those

surveyed did not use floss at all. Majority of the dentists cited lack of awareness, availability, and cost as the major factors affecting floss usage. 63.9% of the dentists prescribed floss routinely to their patients and considered factors like education, occupation, and socioeconomic status of the patient before prescribing dental floss. Dental health is a highly individualized concept. The attitude of people towards their own teeth and attitudes and knowledge of dentists, who provide dental care, play an important role in determining the oral health conditions of the population. Dental professionals are expected to be a good example for oral health behavior (Darshana Bennadi, 2013). Under the light of this, the present study was undertaken to assess the knowledge, attitude, and practice and prescription pattern of interdental aids by dental students.

MATERIALS AND METHODS

After obtaining the necessary permissions from the Scientific Advisory Committee and Institutional Ethical committee, a cross-sectional study was conducted among the dental students (post-graduates, interns, final years) of Sinhgad Dental College and Hospital over a period of 2 months. The sample size was determined to be 200 using the Single Proportion formula.

Study proforma

To assess the knowledge, attitude, self-reported practice and prescription pattern, a questionnaire was prepared with different sections dedicated to the same. The prepared questionnaire was subjected to internal validation by the periodontal experts and after making the necessary changes, was distributed to the study participants. This questionnaire consisted of two parts. The first part obtained information about the sociodemographic details and the second part assessed the knowledge, attitude, self-reported practice and prescription patterns of interdental aids of the study participants. Five closed ended questions assessed knowledge about interdental aids. Attitude of the dentists toward the use of interdental aids was measured by a 5-point Likert scale of “agree,” “strongly agree,” “neither agree nor disagree,” “disagree,” and “strongly disagree” using five questions. Six questions measured the practices being followed by the participants themselves, two being open ended questions. Six question assessed their recommendations to patients. The participants were asked to respond to each item per the response format provided in the questionnaire, in a fixed period of about 20 minutes. The forms were then collected, checked for completeness. The completed questionnaires were collected and subjected to statistical analysis.

Statistical Analysis

Data collected was subjected to Microsoft excel spreadsheet version 15.30(170107). Data analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0. Frequency analysis was done and Chi square test for proportion was used. Pearson’s co relation tests was done to correlate between knowledge and attitude. p value < 0.05 was considered statistically significant at 95% confidence interval.

RESULTS

A total of 200 dental students (postgraduate, interns and final year) participated in the study.

Knowledge of the interdental aids

Mean knowledge score was determined to be 2.27 out of 5. 74.5% of the study participants knew that the interdental brush is preferred to dental floss in case of recession. 48% believed that modern toothbrushes with advanced bristle design are as effective as interdental aids in interdental plaque removal, which is incorrect. 54.5% reported that the loop method was more suited for children as it requires less manual dexterity. 57% were of the opinion that dental floss and interdental aids harm/injure the interdental gingiva. Only 3.5% knew that unwaxed dental floss should not be used if calculus or a defective restoration is present. 100% correct responses were given by only 1% participants. P value of the correct responses was found to be significant for question nos. 1, 4, 5. (Fig. 1)

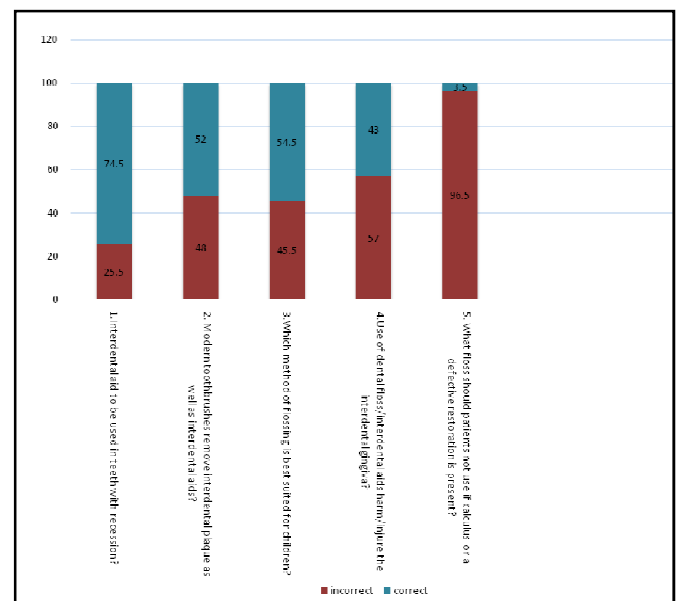


Fig. 1. Assessment of knowledge

Attitude towards interdental aids

Mean attitude score was found to be 2.77 out of 5. 10% strongly agreed and 49% agreed that toothbrush and toothpaste is adequate for removal of debris and plaque. 87% of the dentists agreed or strongly agreed that the routine use of dental floss is necessary for maintaining periodontal health. 57% believed that interdental aids were easily available and inexpensive. 74% reported that dental flossing is a technique sensitive and time consuming procedure. 74% agreed or strongly agreed that interdental aids are not adequately prescribed by dental professionals. 35% study participants were found to have a poor attitude towards the use of interdental aids. No statistically significant co relation was found between the knowledge and attitude of the study participants (p=0.065), (Fig. 2).

Self-reported practices

59% of the respondents do not floss at all. 16% floss once or twice daily. 7.5% floss every alternate day while 22% floss occasionally. 19.5% respondents use other interdental aids like interdental brushes (11.5%) or toothpick (7%) occasionally. Various factors cited by participants limiting their use of interdental aids included time, difficult technique, cost and lack of motivation (Fig. 3,4).

Table 1. Attitude towards interdental aids

Questions	Options	%	P value
1. Toothbrush and toothpaste is adequate to remove the debris and plaque.	SA	10	$\chi^2 = 153.950^a$ df=4 p=.000 S
	A	49	
	SD	4	
	D	31.5	
	N	5.5	
2. Use of interdental aids daily is essential for maintaining periodontal health.	SA	24.5	$\chi^2 = 257.300^a$ df=4 p=.000 S
	A	62.5	
	SD	2	
	D	6.5	
	N	4.5	
3. Dental floss and interdental aids are easily available and inexpensive.	SA	12.5	$\chi^2 = 95.950^a$ df=4 p=.000 S
	A	45	
	SD	8.5	
	D	25	
	N	9	
4. Dental flossing is a technique sensitive and time consuming procedure.	SA	15	$\chi^2 = 207.750^a$ df=4 p=.000 S
	A	59	
	SD	4.5	
	D	18.5	
	N	3	
5. Interdental aids are not adequately prescribed by dental professionals.	SA	12.5	$\chi^2 = 219.400^a$ df=4 p=.000 S
	A	61.5	
	SD	5.5	
	D	13	
	N	7.5	

SA-strongly agree; A-agree; SD-strongly disagree; D-disagree; N-neither agree nor disagree; S-significant (P<0.05)

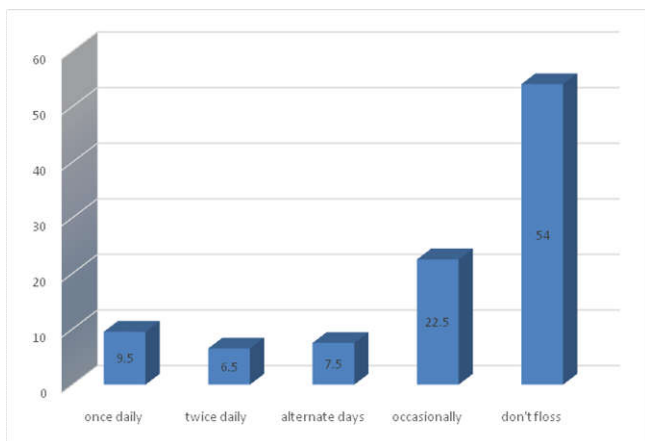


Fig. 3. Frequency of flossing of study participants

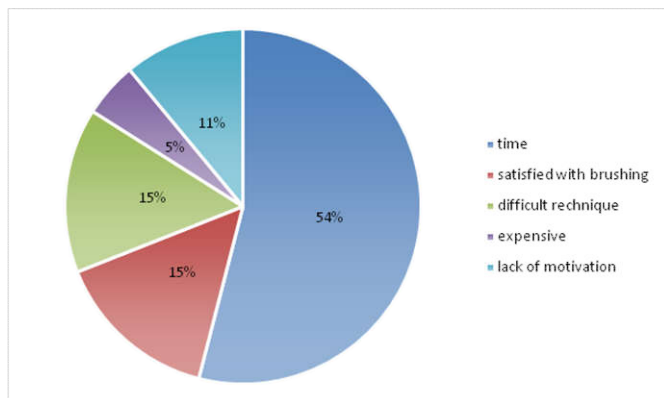


Fig. 4. Factors limiting the use of interdental aids of the study participants

Prescription pattern

81.5% participants reported that they prescribe interdental aids to their patients (Fig. 5) 75% demonstrate the technique of using interdental aids. 54.5% do so verbally, 7% use

audio/visuals while 22.5% use models.48% reassess the oral hygiene status after prescribing the interdental aids (Fig. 6).

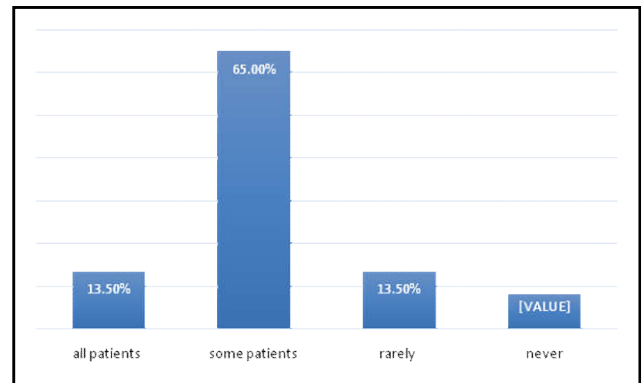


Fig. 5. Frequency of prescription pattern of interdental aids

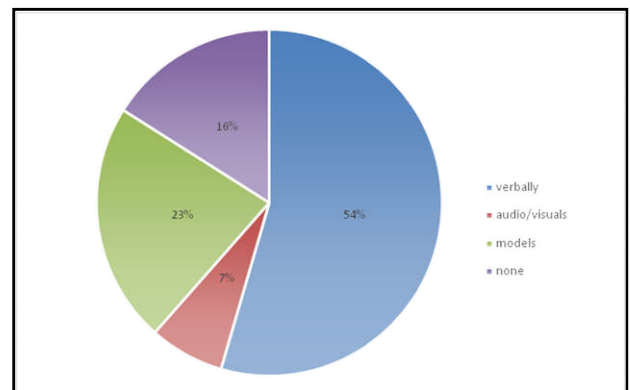


Fig. 6. Method of choice of demonstration of use of interdental aids

DISCUSSION

The removal of inter-proximal plaque is considered to be important for the maintenance of gingival health, prevention of periodontal diseases and reduction of caries (Warren, 1996). Recent research substantiates a role of periodontitis in systemic diseases like cardiovascular disease, including atherosclerosis, myocardial infarction, and stroke. Furthermore, studies suggest that periodontitis may also contribute to adverse pregnancy outcomes, diabetes, and other conditions (Kharidi Laxman Vandana, 2015). Unfortunately, the toothbrush is relatively ineffective at removing inter-proximal plaque and therefore patients require to use additional home care techniques such as interdental aids (Warren, 1996). The use of dental floss along with regular tooth brushing has been recommended routinely for prevention of gingival and periodontal diseases (Nakamura, 2011 and Särner, 2010). There is a lack of awareness regarding interdental aids among the people (Anisha, 2017 and Elizabeth, 2015). Due to this reason, very few people use them (Nakamura, 2011). Maintenance of good oral hygiene with the help of oral hygiene aids will help to reduce the dental diseases (Keerththana Balabaskaran, 2013). The dentists should play a major role in creating awareness about the importance of use of interdental aids and motivating patients to use them. Good knowledge and positive attitude of the dentist regarding interdental aids is essential for this purpose. The prescription pattern is also likely to be positively influenced by this. It is therefore important to assess these parameters among dental students which will help identify any deficiencies and thus plan corrective measures.

Based on the results achieved in the study, knowledge of the dental students was found to be less than average as only 44% answered 3 or more questions out of 5 correctly. This is in spite of the fact that the present curriculum adequately comprehends the subject of the interest of the study. Only 1% participants gave 100% correct responses. Similar results were obtained by various studies (Darshana Bennadi, 2013; Charu Madan, 2014; Mona, 2017; Khalid Gufran, 2015; Shruti Gupta, 2015), suggestive of the fact that there is a lacuna in the knowledge trend and there is want for improvement in the academic prowess of the dental students. A study by Nakamura *et al.* (Nakamura, 2011), reported that dentists who were demonstrated dental flossing procedure at the dental schools by their teachers recommended dental floss more frequently among their patients, compared to those who did not see demonstrations of flossing (Shruti Gupta, 2015). This suggests that more emphasis on the clinical training may prove to be beneficial in improving both knowledge as well as attitude of the students.

It is also important to educate and motivate dental students to adopt recommended oral self-care (ROSC) procedures, like flossing, themselves, as this will encourage them to advocate the same to their patients (Charu Madan, 2014). Daily dental flossing in combination with tooth brushing for the prevention of periodontal disease and caries is frequently recommended (Bagramian 2009; Brothwell 1998). In this study, 87% study participants agreed that the use of interdental aids daily is essential for maintaining periodontal health. However, 74% of the respondents cited dental flossing to be a time consuming and technique sensitive procedure reflecting a negative attitude towards the use of dental floss. There was an agreement by 74% participants that dental floss is not adequately prescribed by dental students. Floss holders can make flossing easier and quicker for people who have trouble manipulating the floss. The treatment plan of each dentist is influenced by his attitude toward treatment methods and their clinical significance (Nilchian, 2014). A positive attitude may influence good oral hygiene practices of the dental professionals as well as general population. Further, it was also found out that there was no statistically significant co relation between the knowledge and attitude of the surveyed dental students. The present study found out that 59% of the surveyed dental students do not floss at all and only 16% floss once or more daily. Few participants floss every alternate day or occasionally (Figure 3). Other studies reported similar statistics. Darshana Bennadi *et al.* (Darshana Bennadi, 2013), reported 18% use among dental students while Charu Madan *et al.* (Charu Madan, 2014), 22%, Gowrapura Chandu (Goryawala, 2016), *et al.* 23%, Nakamura *et al.* (Nakamura, 2011), 23.4% in Japan. According to V Gopinath [17], use of dental floss among Indian dentists was considerably low at 9.2%.

These statistics obtained from various studies suggest that the diminutive use of interdental aids by the dentists themselves needs to improve in order to influence and motivate the general population. Knowledge, attitude, and practice of interdental aids are necessary for both personal oral hygiene care and patient education and motivation. 19.5% respondents use other interdental aids like interdental brushes (11.5%) or toothpick (7%) occasionally. Contrary to the above-mentioned results, the self-reported prescription pattern was notable. 81.5% participants reported that they prescribe interdental aids to their patients. 75% demonstrate the correct technique of using interdental aids verbally, using models or using audio/visual

aids (Figure 6). These results are in contrast with a similar study conducted by Charu madan *et al.* (Charu Madan, 2014) (36.1%). Only 48% reassess the patient's oral hygiene status after prescription of the interdental aids. Re-evaluation after the prescription, however, is more important to gauge the impact of the prescript.

Conclusion

The study represents a comprehensive overview of the knowledge, attitude, practice and prescription pattern of interdental aids by the dental students. The overall knowledge was below average and a greater emphasis is needed to improve it. Most dentists recognize dental floss as an essential oral hygiene aid which should be used routinely. However, various factors such as lack of time, or difficult technique and lack of motivation are responsible for limiting the use of these interdental aids. The reported prescription practice of the interdental aids is satisfactory but demonstration of the correct technique is essential to ensure effective use of these aids.

Conflict of Interest: This study was self-funded and there is no conflict of interest among the authors.

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